Cancer Center, Lake Success, NY; [3] Monter Cancer Center, Lake Success, NY; [4] Hematology Oncology, Monter Cancer Center, Lake Success, NY; [5] Hematology/Oncology, North Shore University Hospital, Lake Success, NY

Plerixafor allows for rapid mobilization of hematopoietic stem cells (HSCs) by disrupting the interaction of HSC receptor CXCR4 and bone marrow stromal cytokine SDF-1 alpha. When combined with granulocyte colony stimulating factor (G-CSF) with or without chemotherapy, rates of successful mobilization are increased in patients who have previously failed to mobilize or have traits predictive of failure. Current package labeling for plerixafor states that leukapharesis (LP) should begin 10-11 hours post administration, the time at which peak peripheral blood (PB) CD34+ cell counts have been observed. Phase I data in healthy volunteers shows that peak PB CD34+ cell count is dose dependent and that counts increase in a linear fashion between hours 1,3,6 and 9. Studies in HLA-matched sibling donors have shown that minimum required yield for transplant can be reached when LP begins 4 hours after plerixafor injection. In our institution, due to time constraints, we follow a model consistent with these previous studies and begin LP 4-6 hours after plerixafor injection. In order to assess efficacy of this timing in patients undergoing autologous stem cell transplant (autoSCT), we completed a retrospective chart review of 43 patients; 25 with lymphoma and 18 with multiple myeloma (MM). The median percent change in PB CD34+ cell count, prior to 1stLP, was 19.9% in lymphoma and 13.45% in MM. 95% of patients reached the minimum yield required for autoSCT in $\leq$ 4 days. One patient with MM and one patient with lymphoma failed to collect adequate levels of HSCs. The median total CD34+ yield was $4.33x10^6$ and $6.73x10^6$ in the lymphoma and MM groups respectively. All but five patients proceeded to autoSCT. Among the 38 patients that remained eligible for autoSCT, the median number of days for ANC and platelet engraftment was 11 and 22 respectively. These results are comparable to historical data, thus showing that high risk patients can collect an adequate number of stem cells, in an expected period of time, with good engraftment results using an alternative plerixafor mobilization schedule.

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Impact of CD34+ Cell-Doses Given during Autologous Stem Cell Transplantation on Absolute Lymphocyte Recovery in Multiple Myeloma Patients

Laahn H. Foster [1], Gina Petroni [2], Paige G. Williams [3], Leonid Volodin [1], Amer Beitinjaneh [1], Mary J. Laughlin [4], Tamila L. Kindwall-Keller [5]. [1] Hematology Oncology, University of Virginia, Charlottesville, VA; [2] Applied Statistics, University of Virginia, Charlottesville, VA; [3] Stem Cell Transplant Program, University of Virginia, Charlottesville, VA; [4] Cleveland Cord Blood Center, Cleveland, OH; [5] Hematology Oncology, University of Virginia School of Medicine, Charlottesville, VA

Background: CD34+ cell-doses given during autologous stem cell transplantation (ASCT) for multiple myeloma (MM) patients (pts) can vary between pts depending on ability to mobilize CD34+ cells and amount of CD34+ cells/kg collected during the apheresis procedure. Published retrospective studies suggest that absolute lymphocyte count (ALC) recovery may be a predictor of overall survival (OS), progression free survival (PFS), and infectious complications in ASCT. It is unclear whether there is an optimal CD34+ cell-dose that correlates with a shorter time to ALC recovery, possibly decreasing infectious complications, and potentially increasing time to relapse.

Methods: A retrospective analysis of ALC recovery was performed on 12 consecutive MM pts who had undergone ASCT from 1/2012 to 1/2013 at the University of Virginia to determine if a relationship existed between CD34+ cell-dose given during ASCT and ALC recovery. For each pt, number/type of infection and ALCs were collected for the first 100 days post-ASCT. OS and PFS were also assessed for each pt. Cox proportional hazard models were used to estimate the association of CD34+ cell-dose infused with time to ALC recovery after ASCT. ALC recovery was defined as the first day of three consecutive measurements for three different cutoff values: ALC $\geq$ 800, ALC $\geq$ 1000, and ALC $\geq$ 1500. No competing risks occurred; therefore, the log rank test statistic was used to assess the significance of the association.

Results: Median age was 60 years (range from 45-71 years), 75% were male, 67% had IgG MM, and 92% had kappa light chain restriction. Fifty-eight percent had ISS Stage I MM and 33% had ISS Stage III disease. The analysis revealed that a higher CD34+ cell-dose given during ASCT showed a trend toward faster ALC recovery, when defined as ALC $\geq$ 800 (p=.043) and ALC $\geq$ 1000 (p=.052). No difference was seen for ALC $\geq$ 1500. Median times to achieving ALC $\geq$ 800 and ALC $\geq$ 1000 were 43 and 59 days, respectively for pts given CD34+ cell-dose $< 4x10^6$ cells/kg; and were 18 and 19 days for pts given CD34+ cell-dose $> 4x10^6$ cells/kg. All five pts transplanted with a CD34+ cell-dose $< 4x10^6$ cells/kg developed at least one bacterial infection. Only one of the seven pts transplanted with CD34+ cell-dose $> 4x10^6$ cells/kg developed bacterial complications. Eighty-two percent of bacterial infections (n=11) occurred in pts given CD34+ cell-dose $< 4x10^6$cells/kg. Median time of follow-up was 12 months (range from 9 to 20 months). Two pts have relapsed, at 10 and 13 months, post-ASCT and no deaths have occurred.

Conclusion: These preliminary results suggest that CD34+ cell-dose $> 4x10^6$ cells/kg given during ASCT for MM may be associated with shorter ALC recovery and lower rates of infections. However, larger prospective trials with longer follow-up are necessary to further define optimal CD34+ cell-dose infusion for ASCT in MM pts in order to improve ALC recovery.

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Routine Radiographic Screening for Lymphoma before Autologous Stem Cell Transplantation (auto-SCT) Does Not Improve Relapse-Free Survival after Auto-SCT

Siddhartha Ganguly [1], Jennifer McRae [2], Jianghua He [3], Clint L. Divine [4], Sunil Abhyankar [5], Omar Aljitawi [6], Joseph McGuirk [7]. [1] BMT Program/ Division of Hematology-Oncology, University of Kansas Medical Center, Westwood, KS; [2] University of Kansas Medical Center, Kansas City, KS; [3] Biostatistics, University of Kansas Medical Center, Kansas City, KS; [4] Blood & Marrow Transplant, The University of Kansas Cancer Center, Westwood, KS; [5] Blood and Marrow Transplant, University of Kansas Medical Center, Westwood, KS; [6] Hematology/BMT, University of Kansas Medical Center, Westwood, KS; [7] University of Kansas Medical Center, Westwood, KS

Background: The role of radiological surveillance with Positron Emission Tomography (PET) or Computed Tomography (CT) after completion of chemotherapy in patients with lymphoma is controversial. Prior studies have shown conflicting results in regards to the benefit of screening for patients with lymphoma using CT or PET versus clinical detection of relapse. What is not known is whether